

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (amended) A method of processing out-of-order messages, comprising:

determining a largest nonce value yet seen from a plurality of nonce values of out-of-order messages;

comparing a nonce value of a received out-of-order message with said largest nonce value yet seen;

comparing said nonce value to an acceptance window in response to said nonce value not exceeding said largest nonce value yet seen;

adjusting a range of acceptable nonce values within said acceptance window, where the size of said range is based on said largest nonce value yet seen; and

rejecting said received out-of-order message in response to said nonce value falling outside said acceptance window.

2. (previously presented) The method according to claim 1, further comprising:

designating said nonce value as said largest nonce value yet seen in response to said nonce value exceeding said largest nonce value yet seen.

3. (original) The method according to claim 1, further comprising:
replacing said largest nonce value yet seen with said nonce value in response to said nonce value exceeding said largest nonce value yet seen.

4. (previously presented) The method according to claim 1, further comprising:

adjusting an acceptance window based on said nonce value exceeding said largest nonce value yet seen.

5. (previously presented) The method according to claim 1, further comprising:

designating said received out-of-order message as a replay attack.

6. (previously presented) The method according to claim 1, further comprising:

comparing said nonce value to a window mask value in response to said nonce value falling within said acceptance window; and

rejecting said received out-of-order message in response to an outcome of said comparison of said nonce value to said window mask value being true.

7. (previously presented) The method according to claim 6, further comprising:

designating said received out-of-order message as part of a replay attack.

8. (previously presented) The method according to claim 1, further comprising:

comparing said nonce value to a window mask value in response to said nonce value falling within said acceptance window; and

accepting said received out-of-order message in response to an outcome of said comparison of said nonce value to said window mask value being false.

9. (previously presented) The method according to claim 8, further comprising:

designating said nonce value as a largest nonce value yet seen.

10. (amended) An apparatus for processing out-of-order messages, said apparatus comprising:

a communication interface configured to transmit and receive a plurality of packets; and

a controller, wherein said controller is configured to:

determine a largest nonce value yet seen from a plurality of nonce values of out-of-order messages;

compare a nonce value of a received out-of-order message and said largest nonce value yet seen;

compare said nonce value to an acceptance window in response to said nonce value not exceeding said largest nonce value yet seen;

adjust a range of acceptable nonce values within said acceptance window, where the size of said range is based on said largest nonce value yet seen; and

reject said received out-of-order message in response to said nonce value falling outside said acceptance window.

11. (previously presented) The apparatus according to claim 10, wherein:

said controller is further configured to designate said nonce value as said largest nonce value yet seen in response to said nonce value exceeding said largest nonce value yet seen.

12. (previously presented) The apparatus according to claim 10, wherein:

said controller is further configured to adjust an acceptance window in response to said largest nonce value yet seen in response to said nonce value exceeding said largest nonce value yet seen.

13. (previously presented) The apparatus according to claim 10, wherein:

said controller is further configured to replace said largest nonce value yet seen with said nonce value in response to said nonce value exceeding said largest nonce value yet seen.

14. (previously presented) The apparatus according to claim 10, wherein:

said controller is further configured to designate said received out-of-order message as part of a replay attack.

15. (previously presented) The apparatus according to claim 10, wherein said controller is further configured to:

compare said nonce value to a window mask value in response to said nonce value falling within said acceptance window; and

reject said received out-of-order message in response to an outcome of said comparison of said nonce value to said window mask value being true.

16. (previously presented) The apparatus according to claim 15, wherein:

said controller is further configured to designate said received out-of-order message as part of a replay attack.

17. (previously presented) The apparatus according to claim 10, wherein said controller is configured to:

compare said nonce value to a window mask value in response to said nonce value falling within said acceptance window; and

accept said received out-of-order message in response to an outcome of said comparing of said nonce value to said window mask value being false.

18. (previously presented) The apparatus according to claim 17, wherein:

said controller is further configured to mark said nonce value as said largest nonce value yet seen.

19. (amended) A computer readable storage medium on which is embedded one or more computer programs, said one or more computer programs implementing a method of processing out-of-order messages, said one or more computer programs comprising a set of instructions for:

determining a largest nonce value yet seen from a plurality of nonce values of out-of-order messages;

comparing a nonce value of a received out-of-order message and said largest nonce value yet seen;

comparing said nonce value to an acceptance window in response to said nonce value not exceeding said largest nonce value yet seen;

adjusting a range of acceptable nonce values within said acceptance window, where the size of said range is based on said largest nonce value yet seen; and

rejecting said received out-of-order message in response to said nonce value not falling within said acceptance window.

20. (previously presented) The computer readable storage medium in according to claim 19, said one or more computer programs further comprising a set of instructions for:

designating said nonce value as said largest nonce value yet seen in response to said nonce value exceeding said largest nonce value yet seen.

21. (original) The computer readable storage medium in according to claim 19, said one or more computer programs further comprising a set of instructions for:

replacing said largest nonce value yet seen with said nonce value in response to said nonce value exceeding said largest nonce value yet seen.

22. (original) The computer readable storage medium in according to claim 19, said one or more computer programs further comprising a set of instructions for:

adjusting an acceptance window based on said nonce value in response to said nonce value exceeding said largest nonce value yet seen.

23. (previously presented) The computer readable storage medium in according to claim 19, said one or more computer programs further comprising a set of instructions for:

designating said received out-of-order message as a replay attack.

24. (previously presented) The computer readable storage medium in according to claim 19, said one or more computer programs further comprising a set of instructions for:

comparing said nonce value to a window mask value in response to said nonce value falling within said acceptance window; and

rejecting said received out-of-order message in response to an outcome of said comparison of said nonce value to said window mask value being true.

25. (previously presented) The computer readable storage medium in according to claim 24, said one or more computer programs further comprising a set of instructions for:

designating said received out-of-order message as part of a replay attack.

26. (previously presented) The computer readable storage medium in according to claim 19, said one or more computer programs further comprising a set of instructions for:

comparing said nonce value to a window mask value in response to said nonce value falling within said acceptance window; and

accepting said received out-of-order message in response to an outcome of said comparing of said nonce value to said window mask value being false.

27. (previously presented) The computer readable storage medium in according to claim 26, said one or more computer programs further comprising a set of instructions for:

designating said nonce value as said largest nonce value yet seen.

28. (amended) A system for processing out-of-order messages in a peer-to-peer configuration, comprising:

a first peer configured to provide secure communication;

a second peer configured to provide said secure communication;

and

a secure communication module configured to be executed by said first peer and second peer, wherein said secure communication module is configured to:

determine a largest nonce value yet seen from a plurality of nonce values of a out-of-order messages;

compare a nonce value to a filter in response to said nonce value of a received out-of-order packet not exceeding said largest nonce value yet seen;

compare said nonce value to a replay mask;

adjust a range of acceptable nonce values within said acceptance window, where the size of said range is based on said largest nonce value yet seen; and

accept said received out-of-order packet in response to said comparison of said nonce value and said replay mask being false.

29. (previously presented) The system according to claim 28, wherein:

said secure communication module is further configured to designate said nonce value as said largest nonce value yet seen in response to said nonce value exceeding said largest nonce value yet seen.

30. (previously presented) The system according to claim 28, wherein:

said secure communication module is further configured to adjust said filter based on said largest nonce value yet seen in response to said nonce value exceeding said largest nonce value yet seen.

31. (previously presented) The system according to claim 28, wherein:

said secure communication module is further configured to reject said received out-of-order packet in response to said nonce value falling outside said filter.

32. (previously presented) The system according to claim 31, wherein:

said secure communication module is further configured to designate said received out-of-order packet as part of a replay attack.

33. (previously presented) The system according to claim 32, wherein:

said secure communication module is further configured to reject said received out-of-order packet in response to said comparison of said nonce value and said replay mask being true.

34. (previously presented) The system according to claim 33, wherein:

said secure communication module is further configured to designate said received out-of-order packet as part of a replay attack.

35. (previously presented) The system according to claim 28, wherein:

said secure communication module is further configured to reject said received out-of-order packet in response to said nonce value fails to fall within said filter and said secure communication module is further configured to designate said received out-of-order packet as part of a replay attack.

36. (amended) An interceptor device for processing out-of-order messages, said interceptor device comprising:

- a network interface;

- an expected sequence register configured to enumerate an expected sequence number of a packet received out-of-order from a second network device;

- a memory configured to store a replay mask; and

- a controller, wherein said controller is configured to:

 - determine a largest nonce value yet seen from a plurality of nonce values of out-of-order messages;

 - compare a nonce value to a filter in response to a sequence number of a received out-of-order packet via said network interface does not exceed said largest nonce value yet seen retrieved from said expected sequence register;

 - compare said sequence number to said replay mask retrieved from said memory;

 - adjust a range of acceptable nonce values within said acceptance window, where the size of said range is based on said largest nonce value yet seen; and

 - accept said received out-of-order packet in response to said comparison of said sequence number and said replay mask is false.

37. (previously presented) The interceptor device according to claim 36, wherein:

- said controller is further configured to designate said sequence number as said largest nonce value yet seen in response to said sequence number exceeding said largest sequence number yet seen.

38. (previously presented) The interceptor device according to claim 36, wherein:

said controller is further configured to adjust said filter based on said largest nonce value yet seen in response to said sequence number exceeding said largest nonce value yet seen.

39. (previously presented) The interceptor device according to claim 36, wherein:

said controller is further configured to reject said received out-of-order packet in response to said sequence number falling outside said filter.

40. (previously presented) The interceptor device according to claim 36, wherein:

said controller is further configured to designate said received out-of-order packet as part of a replay attack.

41. (previously presented) The interceptor device according to claim 36, wherein:

said controller is further configured to reject said received out-of-order packet in response to said comparison of said sequence number and said replay mask being true.

42. (previously presented) The interceptor device according to claim 41, wherein:

said controller is further configured to designate said received out-of-order packet as part of a replay attack.

43. (previously presented) The interceptor device according to claim 36, wherein:

said controller is further configured to reject said received out-of-order packet in response to said sequence number falling outside said filter and said controller is further configured to designate said received out-of-order packet as part of a replay attack.